FROM

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AGENCY NAME & ADDRESS: Baltimore City Health Department
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SUBJECT: Hospital Inpatient Data on Shootings

CITY of BALTIMORE

MEMO

DATE:

TO

Commissioner Leonard Hamm
Baltimore City Police Department
242 West 29th Street

May 23, 2006

I met last Wednesday with Jayne Miller of WBAL-TV to discuss hospital inpatient data on shootings. At your request, here is a summary of the data and my view of its relevance to police crime statistics.

Background

In February, in the wake of questions about the accuracy of the statistics kept by the Police Department, you asked for a review of the best available outside data on the number of shootings in Baltimore City. Police statistics show a 39.9% decrease in gun-related homicides and shootings from 1999-2005.

The Fire Chief identified the EMS call database. This database is derived directly from the call system, which is run independently from the Police Department. It shows a 34.1% decrease in the number of shooting-related transport calls from 1999 to 2005.

I identified the trauma registry database at Shock Trauma and Johns Hopkins Hospital. This database exists specifically to count cases of major trauma seen by the trauma teams. It shows a 37.4% decrease in gunshot trauma to Baltimore city residents from 1999 to 2005.

HSCRC Database

The Health Services Cost Review Commission (HSCRC) sets hospital rates in the state of Maryland. It also maintains a database with information about hospital inpatient and outpatient care.

In responding to your February request, I investigated this database, which is widely respected and considered an important resource for researchers in many fields. However, for the specific question at hand, I learned that the HSCRC database is very different from the trauma registry database. Key differences include:

1. **The purpose of the database.** The goal of the trauma registry is to count and describe specific cases of trauma. The trauma team oversees data collection. By contrast, the HSCRC database is a by-product of the rate setting and payment process. The section of the HSCRC database that includes specific codes for trauma

does not affect a hospital's revenues. These codes are not audited. It is my understanding that hospital billers oversee data entry.

2. **Inpatient hospitalization is not a direct measure of shootings.** Some residents may die in the Emergency Department and never be hospitalized. Others may be discharged from the Emergency Department and never be hospitalized. If someone is hospitalized twice for a single injury, it is counted twice in the HSCRC data. If someone is hospitalized for a gunshot injury in another area, but transported to a Baltimore hospital for definitive care, that case is added to the HSCRC database. In all of these cases, the trauma registry performs better at the task of measuring shootings. It would count those who die in the Emergency Department and those who are discharged. It counts each injury once, and would not count cases referred directly to inpatient physicians for definitive care.

On the basis of the above factors, and on the advice of experts from both the University of Maryland and the Johns Hopkins Hospital, I did not consider the HSCRC data to be the best available data for the purpose of providing an independent check on the crime statistics. As a result, I did not include numbers from that database in my memo to you.

Interview with Jayne Miller

Over the last several weeks, I have met with Jayne Miller at her request several times to discuss the HSCRC data. I have found Ms. Miller to be polite and appropriately interested in understanding this database.[1] This exchange has provided me the opportunity for further investigation and review of the HSCRC data.

Ms. Miller has conducted her own analysis of the HSCRC database, in which she has apparently decided to pick her own codes for inclusion. I cannot verify her data. However, the state of Maryland does keep statistics on the numbers of inpatient hospitalizations for intentional gunshot injuries.

Ms. Miller reports finding a 12% decrease in the number of gunshot-related inpatient hospitalizations in Baltimore City hospitals. This is essentially the same as the decrease noted in the state of Maryland's reports from 1999 to 2004 (see Table, column for Baltimore).

Over this same period, hospitalizations for gunshot related injuries in non-Baltimore hospitals have increased by 64.3%.

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[1] Over the course of our conversations and emails, she has decided not to use any numbers from outpatient visits (which are generally considered less reliable in the HSCRC data) or any numbers from assault-related hospitalizations (because relatively few assaults result in hospital care). I consider these to be reasonable and appropriate decisions.

Table: HSCRC Data on Inpatient Hospitalizations Related to Gunshot Injuries		
	Baltimore	Non-Baltimore
1999	347	129
2004	304	212
Change	-12.4%	+64.3%
Source: State of Maryland, Department of Health and Mental Hygiene		

Ms. Miller asked me to address the discrepancy between the crime statistics and the HSCRC data.

I replied that based on my own review and the advice of experts in this area, I consider this be an apples to oranges comparison. Put simply: the two databases are not measuring the same thing.

Specifically, I pointed out:

1. **The HSCRC database is not intended to capture, nor does it capture, the number of discrete incidents of gunshot injuries seen in a hospital or experienced by a community**. In fact, the HSCRC database can have double-counting and inappropriate counting of referrals. By contrast, the trauma registry (which I had used for the memo) is considered the "gold standard" for counting major trauma.

2. **The available HSCRC data reflects trauma cases handled by Baltimore hospitals, not trauma that occurred to Baltimore city residents or trauma that occurred in Baltimore.** As a result, this database is a poor starting point for comparison to police statistics. For the trauma registry data, we were able to isolate the cases that occurred to city residents. We also were able to review the trauma that occurred inside Baltimore for one of the two hospitals. This decrease in shootings was even greater than the decrease for city residents.

3. **The HSCRC dataset contains substantially less data than the trauma registry information from Baltimore's two leading trauma hospitals.** The data I presented in February contained information about more than 475 shootings of Baltimore residents each year and as many as 920 shootings seen by the two trauma teams in a year. These numbers substantially exceeds the number of cases included in the HSCRC data, which are limited to inpatient hospitalization where the appropriate billing codes were entered. Ms. Miller's data – which reflects all inpatient admissions -- appears to be based on somewhere between 400 and 450 cases per year.

4. **The HSCRC data does not match the police data in other areas of Maryland either.** Ms. Miller told me that the police statistics in Prince George's County show a 20% increase in shootings, but the HSCRC data show a 80% increase in gunshot-related hospitalizations. To me, this enormous discrepancy (bigger than the discrepancy in Baltimore City!) highlights the problems in using the HSCRC data as a check in crime statistics anywhere. Ms. Miller has an explanation for the increase in trauma admissions to Prince George's County, related to changing hospital referral patterns. She does not appear to have conducted a similar analysis of Baltimore referrals patterns. In my view, her need to provide explanation and commentary for the Prince George's County data underscore why the HSCRC data are not appropriate for addressing regional differences in trauma cases. I do not consider the HSCRC data to be a reliable comparison for the crime statistics in Prince George's or any other county.

Ms. Miller and I discussed a 1999 paper that compared the trauma registry with the HSCRC data. This paper found substantial concordance between the datasets in some broad areas of trauma across the state.[2]

I pointed out to Ms. Miller that this paper called the trauma registry – and not the HSCRC database -- the "gold standard" for counting of trauma cases. The paper does not address intentional trauma or regional differences in intentional trauma. I mentioned that I spoke with one of the authors, who told me the paper should not be interpreted to mean that HSCRC data can be used to check a particular county's police crime statistics. The author said that such a question would require additional research.

At the end of the interview, I mentioned that HSCRC data demonstrate a substantial difference between inpatient admissions for gunshot violence in Baltimore City and the rest of Maryland. While admissions dropped by 12.4% in Baltimore City, they rose 64.3% in other areas from 1999 to 2005. In the HSCRC data, two-thirds of the drop in admissions for gunshot violence occurred from 1999 to 2000. The EMS call database, the trauma registry data, and the police statistics all show a substantial decline from 1999 to 2000.

These points support the idea of unusual progress against gunshot violence in Baltimore City from 1999 to 2004, with the biggest drop in 1999 to 2000. I believe it would be fair for any news report based on the HSCRC data to mention these findings. However, because of my overall concerns about the appropriate use of the HSCRC data, I would not recommend that you discuss them publicly.

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[2] M. McCarthy, et. al., *Comparison of Maryland Hospital Discharge and Trauma Registry Data*, The Journal of TRAUMA Injury, Infection, and Critical Care, 154-161 (Jan. 2005).

Additional Issues

Ms. Miller asked me about HSCRC data indicating that hospitalizations for stabbings in Baltimore City have increased. She asked what such data meant to the overall question of violence as a public health issue and whether Baltimore is a safer city.

I responded that I have not investigated the stabbing statistics fully. At any rate, the question of violence as a public health issue is broader than any one statistic. On one hand, the decline in violent crime in the city is reassuring. On the other hand, as I am sure you would agree, there is still far too much violence in Baltimore. Violence affects people's lives, health, and sense of security directly and indirectly. I explained that as health commissioner, I hope to gain a better understanding of the patterns of violence in the city, starting with youth violence.

Ms. Miller also asked me to respond to the statement of a famous criminologist that changes in the number of homicides and nonfatal shootings should track together. I responded that while I am not a criminologist, this idea does not make sense to me from a medical perspective. It would seem to me that changes in medical care or in the lethality of weapons, for example, could lead to divergent trends in homicides and nonfatal shootings.

Referral to Additional Sources of Information

I encouraged Ms. Miller to contact Dr. Glenn Morris, chair of epidemiology at the University of Maryland and Jim Scheulen, the emergency department administrator at the Johns Hopkins Hospital. Both are familiar with the HSCRC database and the trauma registry. She indicated that she is unlikely to do so, because she prefers to consult people from outside this area.

Conclusion

After further review, discussion with experts, and conversations on and off-camera with Jayne Miller, I still do not consider data on inpatient hospitalizations compiled by the Health Services Cost Review Commission (HSCRC) to be a reliable comparison with police statistics related to shooting violence.

Please let me know if you have any questions.